

SPECIAL QUALITY V.H.F. DOUBLE TRIODE

M808I

Special quality double triode for use in equipment where mechanical vibration and shocks are unavoidable and where statistically controlled major electrical characteristics are required.

This data should be read in conjunction with GENERAL NOTES – SPECIAL QUALITY VALVES which precede this section of the handbook, and the index numbers are used to indicate where reference should be made to a specific note.

HEATER

V_{H1}	6.3	V
I_{H1}	450	mA

CAPACITANCES² (measured without an external shield)

* C_{a-g}	1.6	pF
* C_{in}	2.1	pF
C_{out1}	450	mpF
C_{out2}	350	mpF
C_{h-k}	4.0	pF

*Each section

CHARACTERISTICS³ (each section)

V_{a1}	100	V
I_{a1}	9.0	mA
* V_g	-0.9	V
g_m	5.6	mA/V
μ	38	
r_a	6.8	k Ω
R_k	0	Ω

* Fixed bias operation is not recommended

LIMITING VALUES⁴ (absolute ratings)

f max.	250	Mc/s
$V_{a(b)}$ max.	550	V
V_a max.	330	V
p_a max.	2×1.6	W
I_k max.	25	mA
$-V_g$ max.	110	V
I_g max.	2×4.5	mA
V_{h-k} max.	100	V
R_{g-k} max. (cathode resistor bias)	500	k Ω
Maximum acceleration (continuous operation)	2.5	g
Maximum shock (short duration)	500	g
T_{bulb} max.	165	$^{\circ}$ C

TEST CONDITIONS (unless otherwise specified)

V_h (V)	V_{a-e} (V)	V_{g-e} (V)	R_k (Ω)	C_k (μF)
6.3	100	0	50	1000

Voltages are applied simultaneously to both sections. The measurements apply to each section, unless otherwise stated.

TESTS

GROUP A

Insulation

a-rest, measured at -300V

g-rest, measured at -100V

Reverse grid current

$R_{gmax.} = 1M\Omega$, $V_{a-e} = 250V$,

$R_k = 500\Omega$ both sections strapped

GROUP B

Heater current

Heater to cathode leakage current

$V_{h-k} = 100V$ cathode negative

$V_{h-k} = 100V$ cathode positive

Anode current

Mutual conductance

Anode current $V_{g-e} = -30V$, $V_{a-e} = 250V$

Group quality level¹⁰

A.Q.L. ⁵ (%)	Individuals ⁶		Lot average ⁷		Lot standard deviation ⁸ Max.
	Bogey ⁹	Min.	Max.	Min.	Max.
0.25	—	100	—	—	$M\Omega$
0.25	—	100	—	—	$M\Omega$
0.25	—	—	0.5	—	μA
0.65	—	420	480	—	mA
0.65	—	—	—	—	—
—	—	—	10	—	μA
—	—	—	10	—	μA
0.65	—	6.5	11.5	—	mA
0.65	—	4.0	7.5	—	mA/V
0.65	—	—	75	—	μA
1.0	—	—	—	—	—

GROUP C

Change in mutual conductance. $V_h = 5.7V$	2.5	—	—	15	—	—	0.0
Microphonic noise at the anode at 50c/s and 2.0g min. peak acceleration, both sections connected in parallel, $V_b = 250V$, $R_a = 2k\Omega$, $R_k = 1.5k\Omega$, $R_g = R_{g'} = 0\Omega$.	2.5	—	—	15	—	—	mV (r.m.s.)

GROUP D

Glass strain test ^{11A} . No applied voltages	6.5	—	—	—	—	—	—
Base strain test ¹² . No applied voltages	6.5	—	—	—	—	—	—
Capacitances (unshielded). No applied voltages	6.5	—	—	—	—	—	—
C_{in}	—	—	1.4	2.8	—	—	pF
$C_{out'}$	—	—	250	650	—	—	mpF
$C_{out''}$	—	—	250	550	—	—	mpF
C_{a-g}	—	—	1.2	1.8	—	—	pF
C_{h-k}	—	—	3.3	7.5	—	—	pF
Amplification factor	6.5	—	28	48	—	—	—
Reverse grid current. $V_h = 7.0V$, $R_g = 1M\Omega$ both sections connected in parallel	6.5	—	—	1.0	—	—	μA

TESTS

GROUP E

Fatigue¹⁴

$V_h = 6.9V$, 1 minute on 3 minutes off. No other voltages applied, 2g min. peak acceleration, $f = 170c/s$ for 33 hours in each of 3 mutually perpendicular planes.

Post fatigue tests

Heater to cathode leakage current.

$$V_{h-k} = \pm 100V$$

Reverse grid current as in group A

Mutual conductance

Microphonic noise as in group C

Sub-group quality level¹⁰

Shock¹⁵

No applied voltages, 500g

Post shock tests

Heater to cathode leakage current.

$$V_{h-k} = \pm 100V$$

Reverse grid current as in group A

Mutual conductance

Microphonic noise as in group C

Sub-group quality level¹⁰

A.Q.L. ⁵ (%)	Individuals ⁶		Lot average ⁷		Lot standard deviation ⁸ Max.
	Bogey ⁹	Min.	Min.	Max.	
2.5	—	—	—	—	— μA
2.5	—	—	—	—	— μA
2.5	—	3.5	—	—	— mA/V
2.5	—	—	—	—	— mV (r.m.s.)
4.0	—	—	—	—	—
2.5	—	—	—	—	— μA
2.5	—	—	—	—	— μA
2.5	—	3.5	—	—	— mA/V
2.5	—	—	—	—	— mV (r.m.s.)
4.0	—	—	—	—	—

GROUP F

Stability life test¹⁴

Running conditions: $V_{a-e} = 125V$, $R_k = 50\Omega$,
 $V_{h-k} = 180V$ (cathode negative)

Stability life test end points

Change in mutual conductance after 1 hour 1.0 — — 15 — — %

Intermittent life test

Running conditions: $V_{a-e} = 125V$, $R_k = 50\Omega$,
 $V_{h-k} = 180V$ (cathode negative)

Intermittent life test end points

Sub-group (a)

Inoperatives ¹⁶	..	..	..	..	..	..	..	..	2.5	—	—	—	—	—	—
Heater current	..	..	..	..	..	..	..	..	2.5	420	480	20	20	20	mA
Heater to cathode leakage current. $V_{h-k} = \pm 100V$	..	..	..	..	..	..	..	..	2.5	—	—	—	—	—	μA
Reverse grid current as in group A	..	..	..	..	..	..	..	..	2.5	—	—	—	—	—	μA
Mutual conductance	..	..	..	..	..	..	..	..	2.5	3.5	7.5	7.5	7.5	7.5	mA/V
Average change in mutual conductance	..	..	..	..	..	..	..	..	4.0	3.25	7.5	7.5	7.5	7.5	mA/V
	..	..	..	..	..	..	..	..	—	—	15	15	15	15	%

Sub-group (b)

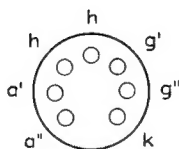
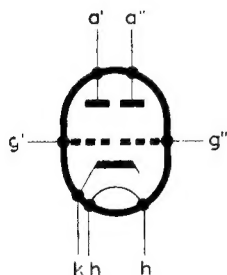
Insulation as in group A	..	..	..	..	..	..	..	..	4.0	50	—	—	—	—	M Ω
Group quality level ¹⁰	..	..	..	..	..	..	..	..	6.5	30	—	—	—	—	M Ω
	..	..	..	..	..	..	..	..	6.5	—	—	—	—	—	%
	..	..	..	..	..	..	..	..	10	—	—	—	—	—	%

GROUP G

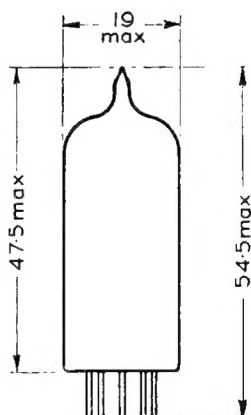
Valves are held for 28 days and retested for
Inoperatives¹⁶

Reverse grid current as in group A.

A.Q.L. ⁵ (%)	Min.	Max.
0.5	—	—
0.5	—	0.75 μ A



B7G Base



[4749]

All dimensions in mm

The bulb and base dimensions of this valve are in accordance with BS448, Section B7G